Pertussis

Overview[1,2,3,5]

For a more complete description of pertussis, refer to the following texts:

- Vaccine-Preventable Disease Surveillance Manual, Pertussis section, CDC.
- Guidelines for the Control of Pertussis Outbreaks, CDC.
- Epidemiology and Prevention of Vaccine-Preventable Diseases, Pertussis section, CDC.
- Red Book, Report of the Committee on Infectious Diseases, Pertussis section.

Case Definition[3]

Clinical case definition

A cough illness lasting at least 2 weeks with one of the following:

paroxysms of coughing, ***or*** inspiratory "whoop", ***or*** post-tussive vomiting ***and*** without other apparent cause (as reported by a health professional).

Outbreak Clinical Case Definition: a cough illness lasting at least 14 days (as reported by a health professional), in an area currently experiencing a pertussis outbreak.

Laboratory criteria for diagnosis

- Isolation of *Bordetella pertussis* from a clinical specimen, or
- Positive polymerase chain (PCR) reaction assay for *B. pertussis*

Case classification:

***--Confirmed*:**

1) a person with an acute cough illness of any duration who is culture positive, or
2) a case that meets the clinical case definition and is confirmed by PCR, or
3) a case that meets the clinical definition and is epidemiologically linked directly to a laboratory-confirmed case.

***--Probable*:** Meets the clinical case definition, is not laboratory confirmed, and is not epidemiologically linked to a laboratory confirmed case.

Comment

A positive PCR test in a person without a cough is NOT a case.

Information Needed for Investigation

Verify clinical diagnosis. Obtain demographic and clinical information on the case from the attending physician, hospital, and/or parent. Obtain all information necessary to complete the Case Report Form-IMM.P.25 (7/97). Determine the case's period of infectiousness and

document name, address, age, sex and circumstances of the exposure of all contacts of the case during this time period.

Establish the extent of illness. Determine if household or other close contacts are, or have been, ill by contacting the health care provider, patient or family member.

Contact the Regional Communicable Disease Coordinator for assistance or if an outbreak is suspected, or if cases are in high-risk settings such as child care, health care, or unvaccinated child populations.

Case/Contact Follow-up and Control Measures[1,2]

Case/Contact Investigation

- Case Diagnosis. Any physician or hospital suspecting pertussis should obtain a nasopharyngeal swab for culture and PCR testing prior to initiating treatment.
  1. Lab kits for pertussis testing may be ordered from your Regional Communicable Disease Coordinator or the State Health Lab.
  2. Forward specimens to State Laboratory in Jefferson City. Instructions are included with the kits or contact the lab at (573) 751-751-0633. Note: Please check the expiration date on the kit prior to collecting the specimen.
  3. Recovery of these organisms is highest during the first week of infection, if the specimen is collected and inoculated properly. The percentage of positive cultures steadily declines with time.
  4. Antibiotic treatment affects the rate of isolation, even during the acute stage of infection. Isolations are seldom made after antibiotic administration of 48 hours duration.

- Case Management
  1. Obtain demographic and clinical information on the case from the attending physician, hospital, and/or parent.
  2. Obtain all information to complete the Pertussis Report Form-IMM.P.25 (7/97).
  3. Obtain names, ages, sex, school or work location, immunization status, and clinical status of all household members.
  4. Determine the case's period of infectiousness. Document name, address, age, and sex of all contacts of the case during this time period. Document the circumstances of the contacts' exposure.

Control Measures. Spread of pertussis can be limited by:

- Decreasing Infectivity of the Patient With Clinical Pertussis

  1. Oral erythromycin is the drug of choice and should be administered in 4 divided doses for 14 days:

     Children: 40mg/kg/day
     Adults: 1 g/day

  2. Trimethoprin-Sulfamethoxazole (TMP-SMZ) is an alternative for patients who do not tolerate erythromycin. It should be administered in 2 divided doses for 14 days:

     Children: trimethoprim 8 mg/kg/day, sulfamethoxazole 40 mg/kg/day
     Adults: trimethoprim 320 mg/day, sulfamethoxazole 1600 mg/day

  3. The CDC recommends erythromycin as the antimicrobial agent of choice for treatment and prophylaxis against pertussis. In recent years, azithromycin and clarithromycin are two antibiotics often administered for treatment and prophylaxis against pertussis. The American Academy of Pediatrics states that because of in vitro susceptibilities, clarithromycin and azithromycin likely to be effective and, thus, are alternatives for patients who cannot tolerate erythromycin.[5]

- Protecting Close Contacts of Patients With Pertussis (i.e. household, day care school, or other non-household *close* contacts (described as a person who has direct contact with respiratory secretions from the case and/or shared confined space in close proximity for a prolonged period of time):

  1. Active immunization:

     Close contacts under 7 years old who have not completed the four-dose primary series of DTaP or who have not received a dose of DTaP within 3 years of exposure should receive one dose of DTaP and complete a primary series with the minimal intervals. Refer to the current "Recommended Childhood Immunization Schedule"[1] for the complete schedule and information.

  2. Chemoprophylaxis:

     Chemoprophylaxis is recommended for all household and other close contacts irrespective of age or immunization status. The antibiotics and dosages used for chemoprophylaxis of contacts are the same as that recommended for treatment of a clinical case.

  3. Period of infectiousness

     — Treated case-isolation should continue for 5 days after the onset of erythromycin treatment.

— Untreated case-isolation should continue until cultures for B. pertussis are Negative or until 3 weeks after the onset of paroxysms.

Surveillance

- Surveillance of Contacts -- Begin surveillance at the time of exposure to a case and continue for 6 weeks after cough onset of the last confirmed or suspected case.

- Surveillance in Community -- Active surveillance should be intensified with notification of pediatricians, family practitioners, schools, childcare facilities, and hospitals to ascertain all new cases.

  1. Childcare facilities--consider all children and adult staff in the same classroom and eating areas as the case to be contacts, if they were present at the facility during the case's period of infectiousness. Following the report of the first case in a facility, review the immunization records of all children, in all classes. If there is evidence of continuing person-to-person transmission, limit enrollment of new children to those who are completely immunized. If two or more cases occur in a center, consider exclusion of all incompletely immunized.
  2. Schools--consider all persons in the case's classroom as contacts if they were present in the class during the case's period of infectiousness. Determine the immunization status of all students in the class and document those students who have young or infant siblings at home. Prioritize surveillance to focus on incompletely immunized students, and students with young or infant siblings.
  3. For assistance with control activities, contact Immunization Representative in your region.

Reporting Requirements

Pertussis is a Category I disease and shall be reported to the local health authority or to the DHSS within 24 hours of first knowledge or suspicion by telephone, facsimile or other rapid communication.

1. For confirmed and probable cases complete a "Disease Case Report" (CD-1), and a "Pertussis Case Report", IMMP 25(7/97).
2. Entry of the complete CD-1 into the MOHSIS database negates the need for the paper CD-1 to be forwarded to the Regional Health Office.
3. Send the completed investigation form to the Regional Health Office.

References

1. Centers for Disease Control and Prevention. Guidelines for the Control of Pertussis Outbreaks. Centers for Disease Control and Prevention: Atlanta, GA, 2000.

2. Centers for Disease Control and Prevention. Manual for the Surveillance of Vaccine-Preventable Diseases. Centers for Disease Control and Prevention, Atlanta, GA, 2002.

3. Centers for Disease Control and Prevention. Case Definitions for Infectious Conditions Under Public Health Surveillance. MMWR 1997:46 (No.RR-10): 15.

4. W. Atkinson, C. Wolfe, (Eds.) "Pertussis." Epidemiology and Prevention of Vaccine-Preventable Diseases 7th ed. Centers for Disease Control and Prevention 2002, 58 – 70.

5. American Academy of Pediatrics. "Pertussis". In: Pickering, LK, ed. 2000 Red Book: Report of the Committee on Infectious Diseases. 25th ed. Elk Grove Village, IL. 2000: 435-448.

6. Recommended Childhood and Adolescent Immunization Schedule, United States, January-December 2003. Approved by the Advisory Committee on Immunization Practices (ACIP), the American Academy of Pediatrics (AAP), and the American Academy of Family Physicians (AAFP).